JULY, 1932

ENTOMOLOGICAL NEWS

Vol. XLIII No. 7

JOHN HENRY COMSTOCK, 1849-1931.
Portrait of 1884.

CONTENTS

Gunder—Macrolepidoptera: Species and Lower Concepts. 169
Rehn—On Preparing Grasshoppers (Orthop.: Acrididae). 175
Miller—The Red and Black Cherry Aphid in Massachusetts (Homop.: Aphiidae) 178
Rockwood and Chamberlin—Additional Host Plants of Grapholitha conversana Wlsm. in the North Pacific Region (Lepidoptera: Olethreutidae) 180
Montgomery—Records of Louisiana Butterflies (Lepid.: Rhopalocera) 182
Van Duzee—Three New Species of Dolichopodidae from North America and Cuba, with Notes on Diaphorus leucostola Loew and its Allies (Diptera) 183
Richards—Paraherminia —New Genus for the European "Herminia" derivalis Hbn. (Lepid.: Noctuidae) 188
McClure—Incubation of Bark Bug Eggs (Hemiptera: Aradidae) 188
Gloyd—Four New Dragonfly Records for the United States (Odonata) 189
Entomological Literature 190
Doings of Societies—Entomology at the Fourth Congress of the International Society of Sugar Cane Technologists in Porto Rico . . 195
Ninth Rocky Mountain Conference of Entomologists. 196

PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1.
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., R. G. Schmieder, Ph.D., Associate Editors.

Advisory Committee: Philip Laurent, J. A. G. Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, John C. Lutz, Max Kisliuk, Jr., Wm. W. Chapman.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions, Central and South America	$3.00
Canada	3.15
Foreign	3.25

Single copies 35 cents.

ADVERTISING RATES: Full width of page. Payments in advance.

One issue,	1 in.,	$ 1.20,	2 in.,	$ 2.40,	half page,	$ 4.00,	full page, $ 7.00
Ten issues	"	11.00,	"	20.00,	"	35.00,	" 60.00

SUBSCRIPTIONS. All remittances and communications regarding subscriptions, non-receipt of the NEWS or of reprints, and requests for sample copies, should be addressed to

ENTOMOLOGICAL NEWS, 1900 Race Street, PHILADELPHIA, PA.

All complaints regarding non-receipt of issues of the NEWS should be presented within three months from date of mailing of the issue. After that time such numbers, if available, will be supplied only by purchase. Not more than two issues will be replaced gratis, through loss in transit or in change of address, unless such have been registered, at the subscriber's expense. No subscriptions accepted which involve giving a receipt acknowledged before a notary, except at the subscriber's expense.

MANUSCRIPTS AND ADVERTISEMENTS. Address all other communications to the editor, Dr. P. P. Calvert, Zoological Laboratory, University of Pennsylvania, Philadelphia, Pa.

TO CONTRIBUTORS. All contributions will be considered and passed upon at our earliest convenience and, as far as may be, will be published according to date of reception. The receipt of all papers will be acknowledged. Owing to the limited size of each number of the NEWS, articles longer than six printed pages will be published in two or more installments, unless the author be willing to pay for the cost of a sufficient number of additional pages in any one issue to enable such an article to appear without division.

Proof will be sent to authors. Twenty-five "extras" of an author's contribution, without change in form and without covers, will be given free when they are wanted; if more than twenty-five copies are desired *this should be stated on the MS.*

Owing to increased cost of labor and materials, no illustrations will be published in the NEWS for the present, except where authors furnish the necessary blocks, or pay in advance the cost of making blocks and pay for the cost of printing plates. Information as to the cost will be furnished in each case on application to the Editor. Blocks furnished or paid for by authors will, of course, be returned to authors, after publication, if desired.

Stated Meetings of The American Entomological Society will be held at 7.30 o'clock P. M., on the fourth Thursday of each month, excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

The printer of the "News" will furnish reprints of articles without covers over and above the twenty-five given free at the following rates: One or two pages, twenty-five copies, 35 cents; three or four pages, twenty-five copies, 70 cents; five to eight pages, twenty-five copies, $1.40; nine to twelve pages, twenty-five copies, $2.00; each half-tone plate, twenty-five copies, 30 cents; each plate of line cuts, twenty-five copies, 25 cents; greater numbers of copies will be at the corresponding multiples of these rates. Printed covers for 50 copies, $4.00 or more, according to number of pages bound.

MACROLEPIDOPTERA

SPECIES— . . . . . *SPECIES*
A prime group of individuals reproducing their own in kind.

RACE –(Subspecies & "variety" being synonymous.) . . . . . *RACE*
A digressing near-by group or a separate far-away group of individuals reproducing their own in kind which are constantly similar to, yet consistently atypical of, a predetermined group.

FORMS

LOCAL FORM—. . . . . *F. LOC.*
A cognate form whose congenial habitat or metropolis is considered restricted to segregated localities within the range of a species or race and generally contiguous to them; i. e. altitude or confined desert forms.

FORM—(or general form) . . . . . F
A form occuring quite generally and commonly throughout the range of a species or race. This term is much abused, new names being given on slight differences usually "representing ordinary variance or usual variance occuring within the range of a typical series and understood by the original author."

SEASONAL FORM— . . . . . *F. VERN. or F. AEST.*
Forms occuring within a species or race only at certain periods of the year.

SEXUAL FORMS— . . . . . ♂ *F.* & ♀ *F.*
Forms belonging to one sex only.

Deviating, cognate individuals or group of individuals, bred continually or at cyclic periods within a species or within a race, and which are, as a rule, practically counterparts of one another.

TRANSITION FORM— . . . . . *TR. F.*
Recurrent individuals within a species or within a race which by change of color or by change of pattern graduate with persistent characteristic similarity from parental type to definitely limited variation away from parental type. These may be classified for name retention as follows:

Change of color——
- melanism—*to black*
- chromatism—*to follow color sequence*
- albinism—*to white*
- pellucidism—*lacking color, or to iridescence*

Change of pattern——
- immaculism—*lacking design*
- albifusism—*white design radiation*
- chromatifusism—*color design radiation*
- melanifusism—*black design radiation*

HYBRID—. . . . . *HYBRID*
Progeny which have the combined essential characteristics of parents each unlike in specific character relation.

UNNAMABLE or SYNONYMOUS FORMS— . . . . . *SYNONYM*
Hermaphrodites, mosaics, dwarfs and giants, rubbed specimens, chrysalis burns, pigmental fluid misplacements, venation malformations, wing shape distortions with resulting pattern changes, scaleless, monstrosities, degreasing or killing color changes, fades, inverted wings, parasitic wing punctures and all so-called freaks, aberrations, mutants, illforms, malforms, deforms and sports.

Names given to specimens which vary from normal in an abnormal way due to the above listed lepidopteric inflictions fall into the synonymy and have no classification rating by rank in check lists or catalogues.

CLASSIFICATION

(GUNDER)

ENTOMOLOGICAL NEWS

VOL. XLIII. JULY, 1932 No. 7

Macrolepidoptera: Species and Lower Concepts.

By J. D. GUNDER, Pasadena, California.

(Plate VII.)

In former times makers of Lepidoptera check lists simply recorded names one after the other, for the most part at random, because practically everything was described either as a new species or as a new "variety" of some species and the procedure of classification and cataloging was easy. Present day listers face a more precise and difficult nomenclature and one which involves showing of the inter-related concepts. By inter-related concepts, I mean those catagories known as races, various forms, transition forms and possibly hybrids. These classificatory divisions, like the rungs on the evolutionary ladder, are units for names, each of which requires and is entitled to a potential position in tabulation which should be as *approximately natural and convenient* [1] as our present knowledge and scheme of printing permits. Our modern check lists, therefore, are a great improvement over the older and more simple lists which were not built on any definite evolutionary standard and there is every reason to believe that future lists will register an even greater accuracy in this respect. To improve future lists taxonomists must study the question of concepts; they must understand their scope, unitize their meaning and know when to employ them to best advantage. There must not be too many concepts, nor too many phrases used to express the same concept; also concepts must not be illogically used, that is, strung together in illogical formation. I will refer to this just a little farther on. If a concept attempts to cover too great a range, it demoralizes its meaning and defeats its purpose; not only that, but it corrupts its value when used again for neighboring names. Of course a minority of new names

[1] Note last sentence in statement by Capt. N. D. Riley of London on page 271 of the November, 1927, ENTOMOLOGICAL NEWS.

cannot be definitely placed immediately or at the time of proposal or for a considerable time after; however, this trouble is mostly to be encountered among the forms and transition forms, so it is in these groups that authors will have to watch most carefully the value of their classification ratings. I have noticed that during the last decade authors are beginning to take more care of their new names and are beginning to realize that the burden of correct check listing is not to be left wholly to the discretion and secondhand judgment of the lister. It was easy in bygone days for an author just to call a thing something-new, like "variety nov." or "ab. nov.", etc., and then let the lister worry as to how it should be placed. Those were indeed the good old days when one took a chance without thought of classification or neighboring names, but that slipshod era is rapidly passing and more and more must the namer shoulder some responsibility when naming for the true position in classification of his new assemblage, which means that naming is being put on a more scientific basis with the result that there will be less synonymy.

A discussion of classification does some good if only to familiarize others as to the more correct usage of terms lower than species. A common error, made by even some of our entomological professors, is the misuse of the terms race and form *when a racial meaning* is in mind. For example, it is incorrect to say, "This form occurs in western America", but the sentence should read, "This race occurs in western America". Remember that a form comes of, is found with, or is an immediate part of either a race or a species, while a race is an independent portion, a unit by itself, much as is a species, except that it is considered less mature. At the bottom of page 183, in the June, 1929, issue of the ENTOMOLOGICAL NEWS, in an article entitled, "What Constitutes a Good Original Description", I referred to an example showing indiscriminate use of the term form. Anyone interested should look up the December, 1928, issue of the *Journal of the New York Entomological Society* and see the paper entitled, "Variations in *Junonia lavinia*" by Dr. Wm. T. M. Forbes. The word form appears 82 times designating various groups.

The classification chart (Plate VII) accompanying this article is similar to the one printed in the November, 1927, issue of the ENTOMOLOGICAL NEWS. Only a few slight changes have been made. The definitions are short and in some cases partially borrowed from longer ones. A short definition rarely overshoots an opinion and is less likely to complicate an issue. Only useable classification terms, as generally understood in America, are included and with one exception, no mention is made of British and Continental conceptions which seem to vary according to the countries. Illogical formation or arrays of terms suggested by misinstructed authors may lead some to anticipate a chance for multinomials, but there is absolutely no danger of phylogeny overbalancing nomenclature, if the subject is understood and handled rightly. Picking at random from names given to North American butterflies, among the many similar and longest combinations definitely possible, the following one happens to be the first on my own check list, *Papilio philenor hirsuta inghami* Gun., (genus *Papilio*, species *philenor*, race *hirsuta*, tr.f. *inghami* Gun.). That is not exactly a brain-breaker, as on the whole, the use of the quadrinomial is well established. Longer nomials are unnecessary and I have never used or advocated any of greater length. Longer names would be absurd, especially in the light of present nomenclature. What troubles taxonomists, or leads them astray, if at all, is standing "the continual strain of association with such horrors" in multinomials as appear in the writings of student undergraduates being "trained" in Lepidoptera at Cornell University. (See 3rd paragraph, p. 324, December, 1930, ENTOMOLOGICAL NEWS; an article by A. B. Klots of Cornell University, now Dr. A. B. Klots of Rochester, N. Y.). For example, the stupid octonomial, suggested therein as possible: *Claudius* (*Megaclaudius*) *crosbyi occidentalis* f.loc. *pasadenensis* f.aest. *megacephlus* f. ♀ *inimicus* tr.f. *absurdus* Jones. To begin with, there is no such thing as a tr.f. of a f. ♀ (keep that point in mind) and it's a mistaken combination, check list or otherwise, which attempts to show a straight f. ♀ of a f.aest. Further, a f.loc. would probably revert to a racial standing if names

were found to be borne of it. To illustrate a similar, but not hypothetical, angle of possible misconception, we COULD NOT say of ab. *rothkei* Reiff. that we have an ab. of *Eurymus philodice*, f. ♀ *alba* Stkr., reading *Eurymus philodice alba rothkei* Reiff.; but WE COULD say we have an ab. *rothkei* Reiff. of *Eurymus philodice* Godt., reading *Eurymus philodice rothkei* Reiff. Crediting any tenable system of classification, my own (as suggested), or any other, with such unachievable accomplishments is a boomerang for a student-author and doubtful instruction on the part of his taxonomic professor.

THE TERM SPECIES.

Among the definitions on the accompanying chart, I would call attention to the use of the word PRIME in species. They say that anyone is foolish to try to define species. That may be so, but my use of the word prime in this instance only tries to straddle our more or less artificial situation by covering priority as to man's discovery and as to oldness by natural descent. There is no one who doubts that our priority arrangement takes an unfair advantage over the natural situation; however, we will have to struggle along for many years before a complete change of system can be worked out. Personally, I would advocate, for the time being, the "forgetting of the Law" when it comes to the "form morn." names. We only have a few isolated cases now and will have less as authors appreciate concept values. I would like to hear from Mr. F. H. Benjamin of Washington upon this subject. Shall it be priority within concepts only?

THE TERM RACE.

The word PREDETERMINED in the definition of race throws the responsibility of determination on to the species where it naturally rests. Sometimes it is asked whether the term *race*, within itself, is a sufficient classification unit, as there are so-called "geographical races" and biological races. All butterfly races are geographical; that is understood when the word race is used alone, so geographical is a superfluous adjective. Likewise are the words climatic and altitudinal superfluous when

similarly used. In the same locality within a species or within a race we have "climatical forms", better expressed as seasonal forms, but these are not races by any means. In original descriptions the word race is used alone with new, no further superlative being needed. It is a sufficient classification unit. Butterflies have no biological races. A few examples have been cited among the moths (Dr. W. H. Thorppe in *Annals of Applied Biology*, Vol. XVIII, No. 3, Aug., 1931). These would still be check-listed as races, I imagine, without the need of an explanatory prefix.

In several articles in the past I have made complaint against the use in original description of the archaic term "variety", as var. nov. and otherwise. Some authors continue its use because they think that all zoological terms, (as well as names), should be in Latin, or of Latin derivation, and some authors think that because others use it, they should continue its employment as well, but the mere use of a term does not enhance its quality. The word race is a very much better designation to use in its place with new; *i.e.* new race. "Variety" is so indefinite and does not mean the same thing to all entomological workers or even to workers in the same Order and it usually has to be accompanied by some explanation. What I mean by explanation is this: for example, three new moths recently described as new varieties or "n. var." by Dr. McDunnough on page 39 of the February, 1932, issue of the *Canadian Entomologist*. As a headline for his article he is forced to say, or rather must think it best to say, that they are "Some undescribed RACES". He uses the term race there in the headline to explain "n. var." found just below in his description proper; but why use a term like "variety" which must need explanation all the time? Why not use the word "race" and be properly understood to begin with? If one of those moth descriptions were ever copied out separately from the original text, as they often are for one reason or other, and his headline should happen to be overlooked, as it is apt to be, then McDunnough's "n. var." would be an open question. Mr. Foster H. Benjamin once told me that when he saw the words "var. nov." in original

description, he was never quite sure as to whether the author meant a race, anyone of the forms, or an "aberration". It has been used many times to mean any of these categories and still is, unfortunately. "Variety" certainly is a poor word at any rate and finds slim companionship in critical classification, being too general and being more or less of an admittance, when used by some authors, of their inability at determination. They employ "variety" when they don't know just what other concept to use, but that is no excuse, if they know their insects and are in a position to describe comparatively at all. I sink the term "subspecies" in preference to "race" for fewer serious reasons and I shed a tear in its behalf. Of course "subspecies" has always been more equivalent in meaning to "race," then "variety" ever was. Some will say that "subspecies" is a good old Washingtonian word and as such, should be kept, like the name Studebaker is on fine carriages. They are quite right; it is a good old word and we still see a few fine carriages, especially in more select rural districts. I surrender to those time-worn arguments and I doff my hat to those venerable four-in-hands as they go trotting by. Shame on those new fangled horseless-carriages!

The Term Local Form.

Dr. J. McDunnough, of Ottawa, uses the category "altitude form" occasionally; *Argynnis rhodope minor* McD., for example, and possibly *Euphydryas chalcedona perdiccas paradoxa* McD. It would seem to be a processive or connective step lower than race in his opinion, or at least not equivalent, otherwise he would employ the word "race" instead. This "altitude form" of his is the same as is meant and defined under local form in my chart, but "local form" seems to me to be a more conformable and explanatory designation, especially as it covers opposite or reversed conditions, *e.g.*, confined desert colonies, etc., and can be understood to include self-sustained units which connect races or species and races as well. Personally, I believe there is little taxonomic consolation to be felt by the use of the "local form" designation in present boreal

American lists, seeing that original description data are available and that such group names can be almost as well understood when placed as straight races. I have never utilized the category myself and include it simply for the convenience of others who, like Dr. McDunnough and Mr. Benjamin, seem to more fully appreciate its value as an intermediate necessity. British and Continental authors refer to the term quite often and I do not see why American authors should not adopt it in the interest of uniformity and thereby help stabilize concepts in this particular classificatory division. In the future, should we find the "home metropolis" of some species to be in Asia, and have a Canadian race as well, then we can connect its "exerge" into Mexico, for example, by the term "local form"; however, in my opinion, with world check lists scarce and with our present knowledge of lineage based mostly on guess-work, a division of this character and meaning will have to bide its time. With regard to the general misunderstanding, misinterpretation and often misuse of well-known classificatory terms, would it not be well for the International Rules of Zoological Nomenclature to eventually set forth some "Recommendations" upon the subject? (See plate IX, page 63, of the February, 1932, issue of the *Bulletin of the Brooklyn Entomological Society*, etc.).

(To be continued).

On Preparing Grasshoppers (Orthop.: Acrididae).

By James A. G. Rehn, Philadelphia.

I have read with considerable interest the article by Mr. Heber C. Donohoe in the May issue of Entomological News entitled, "A Method of Preparing Grasshoppers for Pinned Specimens." Having had over thirty years' experience in both field and laboratory preparation of such material, perhaps a few comments *apropos* of Mr. Donohoe's article, as drawn from my own work, may not be out of place.

Mr. Donohoe is convinced that "stuffed" specimens as such give "unsatisfactory results," and that the abdominal opening unless sealed with paraffin furnishes "favorable conditions for entrance and breeding of museum pests." He also feels "the

abdominal walls of specimens so prepared (i. e. stuffed) are thin and papery and are easily torn and shattered."

To most of us who have had much museum experience with grasshoppers subject to infestation, it is hardly necessary to point out that the abdominal slit is only *one* of the many points of attack. The compound eyes, the prosternum, the coxal areas of all the limbs, the meso- and metapleura and beneath the wings at their bases are equally vulnerable. For a collection tight containers and quarantine are, and always will remain, the real safeguards. Many years ago Dr. Elliott Coues fittingly emphasized this in his proverbial "eternal vigilance is the price of a collection."

Mr. Donohoe directs the preparation to start as follows: "The first eight abdominal sterna are slit mediad." In so broadly opening up the abdomen, I can appreciate how one would have trouble with "papery" abdominal walls. With reasonable skill in the use of the "gutting" forceps it is almost never necessary in a grasshopper to slit more than the three proximal abdominal sterna. In virtually all preparatory technique simplicity and reliability are of paramount importance, combined with the outstanding requisite, *i. e.* proper preservation of the material in hand. After many miles on foot and a gruelling day of desert work I have stuffed as many as three hundred grasshoppers in an evening, by the light of a camp-fire and lantern, with my fingers numb from October cold, and even then a three segment slit was all that was necessary.

With the shorter slit, which leaves intact the often important surface structure of the distal half of the abdomen, the thorax is cleared first, the specimen then turned in the fingers, the *straight* forceps reinserted, and then the abdomen is similarly eviscerated. The smaller of those specimens which need evisceration require no stuffing at all, the abdominal walls possessing sufficient resiliency to return to their true form with a tease or so of the forceps. The larger specimens require only a light stuffing with chopped cotton, gently worked in, so as not to disturb any coloring layers lining the chitin, and merely enough in bulk to keep the walls from collapsing.

Mr. Hebard and I have collected considerably over one hundred thousand Orthoptera in temperate and tropical America, and the simple process in use has proved fully satisfactory. In the case of brilliant green material we also use immersion in a low percentage formaldehyde solution to fix the greens, but such "dipped" specimens must be absolutely dry before packing, as otherwise the formaldedyde will continue working and the color be hopelessly ruined. In using this method, however, the strength of the solution, the length of the immersion and the method of drying vary according to the individual specimen. Although a considerable number may be moving through the dip at the same time, individual treatment is required for the best results, and no set rules can be given, as experience is the sole guide. The results of proper handling, however, are excellent and the greens will be perfectly preserved. We have in the Academy of Natural Sciences many specimens prepared in this way as much as eighteen years ago, when we were first introduced to the method by that veteran entomologist and old friend William T. Davis. These specimens are still as vividly green as they were in life.

The use of paraffin, either as an injection or as an infiltration, would be impractical under most field conditions, and not at all advantageous where heat is applied to force drying or volatilize flake napthaline to combat possible mold, as frequently must be done under humid tropical conditions. It is often difficult for those accustomed only to laboratory methods to realize under what conditions material must be prepared in the field, particularly in humid tropical and extreme desert regions. In our field work Mr. Hebard and I have on several occasions prepared more than a thousand Orthoptera in a single night, and the specimens always came through in distinctly first-class condition. Methods for survey work of this character must be simple, efficient and easily applied. Simple stuffing, when done with reasonable skill, proper drying and packing in the field, and skilled preparations in the laboratory will produce results equal to those of much more complicated technique. The time saved in the field is vitally needed for those invaluable notes which all too frequently are never written on the spot.

The Red and Black Cherry Aphid in Massachusetts (Homop.: Aphiidae).

By Forrest W. Miller, Zoology Department, University of Pittsburgh.

The red and black cherry aphid, *Aphis feminea* (Hottes), was first reported as occurring on the wild black cherry *Prunus serotina,* in Maine by Patch (1914) who ascribed to it the name of *Aphis tuberculata.* This name, however, was preoccupied as explained by Hottes (1930) who proposes the name used here. A second announcement of the occurrence of this species was given by Quaintance and Baker (1920) who stated that it had been found in very small numbers in the District of Columbia. A third and most recent account of the occurrence of the species was given by Hottes (1931) who reports it from Illinois.

During the summer of 1930 the writer collected this species in the region of Woods Hole, Massachusetts. The host was *Prunus serotina* as was reported in all previous cases. The forms were first noted on June 16th and observations were made until September 12th. During the entire month of June and the first week of July the species was restricted to one host plant of the wild black cherry but later a few alate females appeared and these migrated to a second tree about twenty feet distant and started a colony there. Feeding was entirely upon the stem. During the latter part of August the aphids were accompanied by ants, the species of which was undetermined.

At no time during the entire period of observation did the number increase so rapidly as to cause overcrowding. Throughout the entire summer the species was restricted to the two wild cherry trees mentioned above. That the species is not very common is evidenced by the fact that it has been found and reported but four times and further, where it is found it is apparently restricted to a very small locus. Hottes (1931) offers some possible explanation for this fact. The small trees upon which the Woods Hole species was collected were located very close to a tree and shrub nursery. It is very likely that the form was brought to this region upon one of these trees or shrubs. The following is a detailed description of the different forms collected at Woods Hole, Massachusetts, during the summer.

Alate Viviparous Female.

Size and general body color: Average length from the vertex to tip of anal plate, 1.57. Head, thorax, legs, cornicles and antennae are black. Abdomen a deep red with five lateral black spots. Forewing with stigma brown, veins light brown, region in the vicinity of the base of the wing a deeper brown. Beak very dark brown to black.

Head and appendages: Average width of head across eyes, .47. Antennal segments with lengths as follows: II—.079 to .081, average .08; III—.360 to .368 average .364; IV—.302 to .314 average .308; V—.168 to .172 average .170; VI—.097 to .099 average .098 plus .320 to .326 average .324. Secondary sensoria numbering 18 to 22 on the third segment, 11 to 15 on the fourth, and four to five on the fifth segment. Primary sensoria on the sixth segment surrounded by small marginal sensoria. Antenna imbricated and with few hairs. Beak extending to the end of the mesothoracic coxae.

Thorax and appendages: Prothorax with a pair of large lateral tubercles. The second fork of media slightly closer to the margin of the wing than to the first fork.

Abdomen: Large lateral tubercles located on segments 2, 3, 4, 5, and 7. Cornicles straight averaging .28 in length with a flange at the apex, and imbricated. Cauda averaging .08 in length, not constricted, and with from four to five pairs of lateral hairs, the terminal pairs incurved.

Apterous Viviparous Female.

Size and general body color: Average length from vertex to tip of anal plate, 1.9. Head, thorax, and abdomen of a light red color and covered with a white powdery wax secretion. First two antennal segments concolorous with head; third to sixth segments darker. Legs of deeper red than the body. Beak same as in alate female.

Head and appendages: Average width of head across eyes, .47. Antennal segments with lengths as follows: II—.07 to .10 average .094; III—.25 to .27, average .26; IV—.24 to .26, average .25; V—.24 to .25 average .24; VI—.10 to .13 average .11 plus .28 to .30 average .29. Secondary sensoria absent, imbricated, and bearing a few fine hairs. Beak extending to the middle of the prothoracic coxae.

Thorax and appendages: A pair of lateral tubercles on the prothorax.

Abdomen: Abdominal tubercles located on segments 2, 3, 4, 5 and 7. Cornicles averaging .37 in length and shaped as in the alate viviparous female. Cauda averaging .09 in length and with four to five pairs of lateral hairs.

LITERATURE CITED.

PATCH, E. M. 1914. Maine aphids of the rose family. Maine Agr. Exp. Sta. Bull. 233, p. 254-280.

QUAINTANCE, A. L., and BAKER, A. C. 1920. Control of aphids injurious to orchard fruits, currant, gooseberry, and grape. Farm. Bull. 1128, p. 1-48.

HOTTES, F. C. 1930. Aphid Homonyms. Proc. Wash. Bio. Soc. 43, p. 179-84.

———. 1931. Plant lice or aphiidae of Illinois. Nat'l Hist. Survey Bull. 19:3, p. 193.

Additional Host Plants of Grapholitha conversana Wlsm. in the North Pacific Region (Lepidoptera: Olethreutidae).

By L. P. ROCKWOOD and T. R. CHAMBERLIN, U. S. Bureau of Entomology, Forest Grove, Oregon.

Rockwood and Zimmerman (Jour. Agr. Research, Vol. 43, No. 1, pp. 57-65, 1931) have recorded biological and descriptive notes on this western clover seed caterpillar. They found the larvae of this species commonly on the native clover *Trifolium involucratum* Ort. and rarely on red clover, *T. pratense* L., on the Oregon seacoast. Since the preparation of this article the writers have made additional observations on *G. conversana* in the quite different environment of the intermountain region.

In June, 1930, the writers made an effort to collect this species near Lord Walsingham's type locality, "Camp Watson," in what is now Wheeler County, Oregon. A variety of *T. involucratum* was found growing there but this was not infested and no moths were collected. It is possible that close grazing, in the past, may have eliminated the seed caterpillar in this locality. Proceeding to Grangeville, Idaho, an attempt was then made to ascertain if it was this species which was reported (l.c., footnote, p. 62) to have damaged alsike clover in 1929.

On the farm of Mr. Ben Baker near Harpster, Idaho County, Idaho, a few heads of alsike clover that were infested with seed caterpillars were found after a considerable search. Mr. Baker stated that these were the same insects that caused appreciable damage to his alsike clover seed crop in 1929. However, after

assisting in the search, he said that they were much scarcer than they had been in the previous year. The writers inquired if he had observed any native clover near his fields. Mr. Baker then stated that there had originally been some but that it had been killed out by cultivation. He directed us to his son's place 5 miles southwest (towards Grangeville), where there was considerable native clover in a natural meadow. Here were found two species of native clover, *Trifolium douglasii* House and *T. plumosum* (?) Dougl. The flower heads of *T. douglasii*, which were of about the size and color of red clover heads, were found to be heavily infested with seed caterpillars. None of these were found on the white heads of the hairy *T. plumosum* (?).

A large series of moths of *Grapholitha conversana* Wlsm. (det. by Carl Heinrich) were reared from the heads of *T. douglasii* in the period from April 1 to April 7, 1931. These averaged larger in size than those previously reared from *T. involucratum* on the Oregon coast. Thirteen specimens of the same species were reared also from alsike clover heads, which had been collected on Mr. Baker's farm near Harpster.

A few days after leaving Grangeville, the writers examined *T. douglasii* and *T. plumosum* (?) in a meadow near La Grande, Union County, Oregon, but no seed caterpillars were found here. In June, 1931, the writers examined *T. involucratum* in a wet meadow near Paisley, Lake County, Oregon, and found that the flower heads were well infested with a seed caterpillar which is doubtless this species.

These records give us a new locality, north-central Idaho, for *Grapholitha conversana* and two new host-plant records, *Trifolium douglasii* House and alsike clover, *T. hybridum* L. There is evidence of a wide but discontinuous distribution west of the Rocky Mountains. The rearings from Idaho material indicate the same one-generation life cycle as was earlier found for the Oregon coast region. This seed caterpillar already shows a tendency to adapt itself to red and alsike clovers and it may become a pest of considerable importance, especially to growers of alsike clover seed, in some of the clover seed districts west of the Rocky Mountains.

Records of Louisiana Butterflies (Lepidoptera: Rhopalocera).

By Robert W. Montgomery, Poseyville, Indiana.

In 1925 B. E. Montgomery captured a number of butterflies in the vicinity of Tallulah, Louisiana. These have been given to the writer and the records are presented in this paper.

Papilionidae.

1. Papilio polyxenes Fab. Tallulah, July 25, August 16.

Pieridae.

2. Pieris protodice Bdv.-Lec. Tallulah, June 26; 7 miles southeast of Tallulah, July 25.
3. Catopsilia eubule L. Bear Lake, Madison Parish, July 18; seven miles southeast of Tallulah, July 25; Tallulah, August 16.
4. Colias eurytheme Bdv. Tallulah, June 26.
5. Terias nicippe Cram. Tallulah, July 2, 25, 27; Bear Lake, Madison Parish, July 18.
6. Terias lisa Bdv.-Lec. Bear Lake, Madison Parish, July 18; Tallulah, July 25, August 2, 27; Roadside, Madison Parish, July 23.

Nymphalidae.

7. Dione vanillae Hbn. Tallulah, August 5.
8. Euptoieta claudia Cram. Tallulah, July 27, 28, August 1.
9. Phyciodes tharos Drury. Tallulah, June 26, July 27, August 1, 5; Bear Lake, Madison Parish, July 18.
10. Cynthia huntera Fab. 7 miles southeast of Tallulah, July 25.
11. Basilarchia archippus Cram. Lake Bruin, Tensas Parish, July 26, August 8.
12. Anaea andria Scud. Madison Parish, July 23. Ovipositing on goatweed.

Libytheidae.

13. Libythea bachmani Kirt. Bear Lake, Madison Parish, July 18; small stream in woodland, 7 miles southwest of Tallulah, August 10.

Lycaenidae.

14. Strymon cecrops Fab. Woodland, Tallulah, June 21, July 25.
15. Everes comyntas Godt. Tallulah, June 26.

Three New Species of Dolichopodidae from North America and Cuba, with Notes on Diaphorus leucostola Loew and its Allies (Diptera).

By M. C. Van Duzee, Buffalo, New York.

Condylostylus nigritibia new species.

♂ : Length 5 mm. Face wide, narrowed below, blue, more green on the sides, suture near its middle, lower part with thick white pollen, which extends more thinly to a little above the antennae, face very obtusely pointed on lower edge; front shining blue; palpi and proboscis black; antennae black, bristles on lower side of second joint longer than antenna, third joint nearly round; arista dorsal, as long as head height; beard rather short, white.

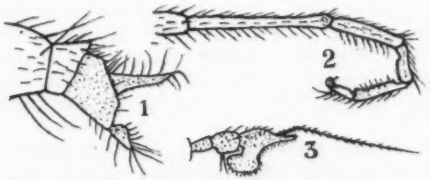

Fig. 1, *Condylostylus nigritibia* new species, hypopygium of male.
Fig. 2, *Mesorhaga ornatipes* new species, fore tarsus of male.
Fig. 3, *Diaphorus leucostola* Loew, antenna of male.

Thorax green, dorsum with white pollen along the front and bronze reflections on anterior half, blue on posterior part; scutellum blue with two pair of large bristles. Abdomen shining green with black incisures, which cover more than half of the segments towards tip of abdomen and become coppery, sides and venter of anterior half with rather short, white hair; hypopygium (fig. 1) small, black, its outer appendages black, finger-like, as long as hypopygium, with rather long hair on outer side and at tip.

Coxae and femora green; anterior coxae with long, white hair and two slender black bristles; tips of fore and middle femora yellow, all femora with white hair below, which is as long as width of femora; fore and middle tibiae yellow, former with three or four bristles on lower posterior edge, these are slender and nearly as long as second joint of fore tarsi; middle tibiae with extreme tip blackened; hind tibiae and all tarsi wholly black; fore basitarsi with three bristles below, the one at apical

fourth about as long as those on fore tibiae, the one at basal fourth very short; second joint of fore tarsi with a row of spine-like hairs below, which are as long as diameter of joint and continued on next joint, where they are much shorter: joints of fore tarsi as 72-30-22-16-8; of middle ones as 77-30-21-11-7; of posterior pair as 69-32-19-13-9. Calypters and their cilia black; knobs of halteres wholly yellow, petiole black.

Wings grayish with the usual two blackish cross-bands united along the costa as far back as third vein, beginning well beyond tip of first vein and extending to half way between tips of second and third veins, basal band quite wide and ending abruptly at fifth vein, apical band equally wide and ending a little back of fourth vein, hyaline space between them of the same width as the bands; fork of fourth vein at a little less than a right angle with basal part of fourth vein, upper bend but little rounded, last part running nearly straight to wing margin near tip of third vein, which bends backward at tip; last section of fifth vein nearly straight and scarcely reaches wing margin; fourth vein from cross-vein to fork as 54, from fork to wing margin 30; cross-vein as 38, last section of fifth vein 31.

♀ : Differs from male in having fore coxae, all femora and tibiae yellow, knees of hind legs black; apical fourth of hind tibiae black, shading into the yellow above; white hair on fore coxae short; bristles on second joint of antennae not longer than antenna; fore tarsi yellowish on basal half, bristles on first joint shorter; fore tibiae with very short bristles; femora with very short pale hair below; abdomen blue posteriorly or wholly green, shining, with scarcely any white hair at base below; color of head and thorax and the wing characters as in the male.

Described from three male and two females, taken by S. C. Bruner, at Santiago de los Vegas, CUBA. *Type* in the author's collection.

This species is related to *similis* Aldrich, from Mexico, but differs in having the hind tibiae wholly black.

Mr. Bruner reports this species as abundant everywhere around Santiago.

Mesorhaga ornatipes new species.

♂ : Length 3 mm. Face green, but wholly opaque with white pollen when viewed obliquely; front shining green, with one

black bristle at outer third near middle and four white bristle-like hairs on each side near vertex, oceller tubercule with a pair of black, rather short, straight bristles and several delicate white hairs; palpi and proboscis yellow with white hair; antennae black, bristles on second joint white, about as long as third joint; third joint round, brownish, arista dorsal, nearly bare, black; orbital cilia and rather scanty beard white.

Thorax and scutellum shining green, pleurae with a little white pollen; bristles of thorax black, acrostichal bristles rather long, in two irregular rows; five dorsocentral bristles; abdomen green with bronze and reddish coppery reflections, dorsum with minute white hairs; sides of first segment with long white hair; hypopygium and its appendages black, outer lamellae not very wide, but nearly as long as hypopygium, a little enlarged at base.

Coxae black or greenish with white hair, fore coxae yellow at tip; all femora and tibiae pale yellow with their hairs partly black; extreme tip of hind tibiae black; all femora with long white hair below, those on middle femora in two rows, the posterior row short, anterior row with some of the hairs longer than width of femora; middle tibiae with a very small bristle above near basal third; all tarsi blackened from tip of first joint; fore tarsi (fig. 2) with bristles below on second joint, third joint shorter than fourth with little spines below; hind tarsi with last two joints a little widened and flattened; length of fore tibiae as 57, joints of fore tarsi as 36-17-8-12-5; middle pair as 49-18-11-9-6; joints of posterior pair as 33-28-16-10-6; last two joints as 4 wide. Calypters white with black edge and long white cilia; knobs of halteres yellow.

Wings nearly hyaline; last section of fourth vein not as abruptly bent as in some species, the bend rounded; fourth vein from cross-vein to bend as 23, from bend to tip 62, cross-vein 23, last section of fifth vein 29; third vein nearly straight; fifth vein straight with an angle at cross-vein, its last section straight but running downward to hind margin of wing.

Described from two males, taken by S. C. Bruner and V. L. Boucle, June 6, 1930, at Manacas Station, E. E. A. de Clara. CUBA. *Holotype* in the author's collection.

This is much like *jucunda* Becker, Paraguay, but in that the hind tarsi are as thick as tibiae, with last two joints widened; fore coxae black only at base. The Georgia female he places with the pair from Paraguay is more likely to be this species, the females of the two species must be very nearly alike.

DIAPHORUS LEUCOSTOLA Loew and allied species.

Among the North American *Diaphorus* there is a group having the third antennal joint more or less like that of *leucostola* Loew (fig. 3), that is with a point projecting from the upper apical corner, the front wide, nearly as wide as the face, color of body and size about alike in all. These are separated by the color of the legs and feet, size of pulvilli and bristles at tip of abdomen, and length and color of palpi. The seven forms may be separated by the following key:

1 Second antennal joint cutting into third on its upper part, that is the lower basal corner of third joint extending more or less basally beyond apical end of second joint..3
Second antennal joint not cutting into base of third at all..2
2 Hind tibiae wholly black, (Idaho; Nevada; Colorado), *aldrichi* Van Duzee
(Montana) .....*albifacies* Parent.
Hind tibiae largely yellow. (Pennsylvania), *similis* Van Duzee.
3 Hind tibiae yellowish brown; second antennal joint cutting into third but little, about as long as wide, (California), *occidentalis* V. D.
Hind tibiae brownish black; second antennal joint cutting half, or more than half its length into third, longer than wide, (Ontario) .....*quadratus* Van Duzee.
Hind tibiae yellow, sometimes with a black tip; second antennal joint cutting deeply into base of third.....4
4 Dorsum of thorax with a median coppery vitta, (Virginia), *vittatus* Van Duzee
Thorax without a vitta, (*leucostoma* Loew).....5
5 Hind tibiae wholly yellow, hind tarsi yellow at base. (North America; Guatemala). .....*leucostoma* Loew.
Hind tibiae blackish brown at tip, hind tarsi wholly black, (North America), *leucostoma* variety *infuscatus* Van Duzee

I find no difference between *albifacies* Parent, 1929, and *aldrichi* Van Duzee, 1915.

Argyra (Leucostola) basalis new species.

♂ : Length 5 mm. Face narrow, face and front wholly silvery white pollinose; palpi nearly round, yellow; proboscis black; antennae black, first joint bare above, third joint, scarcely twice as long as first two taken together, its tip rounded; arista nearly twice as long as the antenna, in-

serted just above the tip of third antennal joint; posterior orbits with a few black cilia above and delicate white cilia on lower third.

Dorsum of thorax bright shining green with thin white pollen along the front, and thick silvery white pollen on the side in front of the wings; pleura black with rather thin white pollen, its posterior edge infuscated; scutellum with one pair of rather small marginal bristles. First three abdominal segments yellow with only the extreme apical margins a little blackish, fourth segment dark yellow with basal half blackish, last two segments black; last three segments thickly covered with silvery white pollen; hairs of abdomen black. Hypopygium black with yellow appendages, which are formed about as in *involuta* Van Duzee (fig. 31, pl. i, Proceedings of the U. S. National Museum, Vol. 66, Article 23), except that the outer lamellae are more triangular.

Coxae, femora, tibiae and fore and middle tarsi wholly pale yellow, except the tarsi which are slightly brownish towards tip, hind tarsi brown; anterior surface of fore tarsi with a few delicate, yellowish white hairs and two large and three small black bristles, one of the large bristles is near the middle of outer edge, all other bristles are near tip; fore and hind femora with delicate yellow hairs below, those on anterior pair nearly as long as width of femora, those on posterior pair shorter; joints of hind tarsi as 37-37-25-17-9. Calypters yellow with the tip broadly black, their cilia yellow; halteres pale yellow.

Wings grayish; third vein bent backward towards tip; last section of fourth vein only slightly bent before its middle, nearly parallel with third vein, its tip just back of the apex of wing: last section of fifth vein as 55, cross-vein as 19.

Described from one male taken by the author, June 24, 1923, at Little Valley, NEW YORK. *Holotype* in the author's collection.

This would run in the table of species of *Leucostola* in the Proceedings of the U. S. National Museum, Vol. 66, Article 23, page 6, to *flavicoxa* Van Duzee, but in that species the hind tibiae are brownish yellow, only the extreme base being yellow, fore coxae with one or two blackish bristles, the hypopygial appendages are of very different form and the abdomen also of different color.

Paraherminia—New Genus for the European "Herminia" derivalis Hbn. (Lepid.: Noctuidae).

A. GLENN RICHARDS, JR., Entomology Dept., Cornell Univ., Ithaca, New York.

The following generic name is proposed at this time because I would like to refer to it in another paper where it would be inconvenient to describe it. The genotype of *Herminia* Latreille is *tentacularia* Linnaeus, a form which is closely related to, but not congeneric with, *derivalis* Hübner.

Paraherminia gen. nov.

Frons smooth with a slight tuft. Palpi oblique; second segment long and straight, third short and pointed. Antennae of male ciliated and bristled, without a knot-like swelling. Foretibia of male unmodified. Body, wings and tibia smoothly scaled. Tympanic hood greatly reduced, almost membranous, and slightly postspiracular.

Genotype: N. derivalis Hübner.

Differs from *Herminia* in that the antennae lack the knot-like swelling, and that the hood is slightly postspiracular instead of prespiracular. Probably the most striking differences are in the accessory tympanal structures, especially the hood. These will be treated in detail in a subsequent paper. *Derivalis* Hbn. is a peculiar species, and seems to represent a connecting link between the Hypeninae and the Herminiinae.

Incubation of Bark Bug Eggs. (Hemiptera: Aradidae.)

In 1926 it was observed that several hundred Flat bugs or Bark bugs, of the species *Neuroctenus pseudonymus,* were feeding upon the juices of decay under the bark of a dead oak tree in a woods east of Lake Dallas Dam, Lake Dallas, Texas. Eggs, nymphs of all instars and adults were present.

The eggs were laid in triangular masses of from ten to fifty, side by side and end to end shingle-like, within the channels cut in the wood and bark by wood-boring insects. They were 1 mm. long, white, elliptical, and flattened as the bugs, and did not change color nor shape during the incubation period.

It was noted that after the female had laid the eggs and

departed, another adult (the sex was not determined, probably the male) crawled astride the group and remained there immobile until they hatched. The incubation of the eggs observed extended over a period of at least two weeks.

Pieces of bark bearing the insects and eggs were removed and placed with the inner sides out in a well-lighted room. All the insects, but that astride the eggs, migrated to the darkened side.

Upon hatching, the little nymphs, of the size and color of the eggs, climbed on top of the empty and collapsed egg shells and remained under the guardian for two days. Then the adult left the colony which then broke up.

There were two distinct forms of adults present. Both were about eight millimeters long. One type was black except for the iridescence of the wing membranes. The other form was a yellow-brown or tan with the connexiva a dark brown. It was the darker form that brooded the eggs.

H. ELLIOTT MCCLURE, Urbana, Illinois.

Four New Dragonfly Records for the United States. (Odonata.)

In cataloging recent accessions to the Odonata collection in the Insect Division of the Museum of Zoology, University of Michigan, I found specimens representing the following four species which have not been recorded for the United States.

ARGIA BARRETTI Calvert. Llano River, Junction, Kimble Co., Texas: 1 ♂, November 5, 1929, E. B. Williamson. The type male collected at Linares in Nuevo Leon, Mexico (Coll. P. P. Calvert) was the only one known until Mr. Williamson took the species in Texas. Dr. Calvert has compared the two specimens and confirms the identification of the Texas male.

ARGIA OENEA Hagen. Nogales, Arizona (16 mi. n.w., on the Quebrada Sonoita in Santa Cruz Co.): 1 ♂, September 23, 1923, J. H. Williamson. Santa Catalina Mountains, Cañada del Oro, Pima Co., Arizona: 1 ♂, August 4, 1930, L. K. Gloyd. The northernmost Mexican locality from which the species has been reported is near Santa Ana in Chihuahua.

AESHNA DUGESI Calvert. Davis Mountains, Limpia Cañon (Granger's Ranch), Jeff Davis Co., Texas: 9 ♂ 1 ♀, July 5, 1930; 4 ♂ 1 ♀, June 25, 1931, L. K. Gloyd. This species is recorded by Dr. Calvert in the Biologia Centrali-Americana (p. 185) from "Mexico [1 ♂], Guanajuato [Dr. A. Dugès: 1 ♂]

(U.S.N.M.)." There is also one male collected by Mr. J. H. Williamson at Los Parres, Baja California, on October 7, 1923, in the collection of the Museum of Zoology. These sixteen males and two females are the only known specimens.

WILLIAMSONIA FLETCHERI Williamson. Manistique, Michigan: 1 ♂, June 5, 1929, W. W. Newcomb. All previous records have been for Ontario, Canada.

LEONORA K. GLOYD, University of Michigan, Ann Arbor, Michigan.

Entomological Literature

COMPILED BY LAURA S. MACKEY UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The **figures within brackets** [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of ENTOMOLOGICAL NEWS for 10c. The number of, or annual **volume**, and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

'(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞ *Note the change in the method of citing the bibliographical references, as* **explained above.**

Papers published in the Entomological News are not listed.

GENERAL.—Bethune, C. J. S.—Obituary notice. [4] 64: 97-98, ill. **Debauche, H.**—Methode rapide de préparation des génitalia. [Lambillionea] 1932: 99-101. **Faggioli, D.**—Nuovo apparecchio per soffiare le piccole larve di insetti. [Bol. Lab. Ent. Bologna] 4: 18. **Heikertinger, F.**—(See under Coleoptera). **Pearse, A. S.**—Environment and heredity. [76] 1932: 541-544. **Sherman, J. D.**—The "First Series A of the Bulletin of the Brooklyn Entomological Society Volumes I-VII: 1878-1885. [19] 27: 102-106. **Tillyard, R. J.**—Origin of insects from Crustacea. [31] 129: 828-829, ill.

ANATOMY, PHYSIOLOGY, ETC.—Andresen, E.—Veränderungen des kaninchenauges unter der giftwirkung der käfer Epicauta und Mylabris. [Zeit. Parasit.] 4: 387-394. **Bonet, F.**—Sobre la estructura del mesénteron y sus apéndices tubuliformes en los fásmidos. [Eos] 8: 93-114, ill. **Bridges, C. B.**—Apparatus and methods for Drosophila culture. [90] 66: 250-273, ill. **Craig, C. F.**—The possible chemotactic effect of the salivary secretions of certain insects upon microfilariae. [68] 75: 561-562. **Gäbler, H.**—Regenerationsvorgänge an Heteropterenfühlern. [34] 98: 275-280, ill. **Grandi, G.**—Contributi alla conoscenza biologica e morfologica degli Imenotteri melliferi e predatori. [Bol. Lab. Ent., Bologna] 4: 19-72, ill. **Grandi, G.**—La morfologia comparata di alcuni stati larvali di 20 Microlepidotteri minatori. [Bol. Lab. Ent. Bologna] 4: 223-338, ill. **Henriksen, K. L.**—The manner of moulting in Arthropoda. [51] 11: 103-127, ill. **Hirschler, M. J.**—Sur certains composants plasmatiques membraneux et granulaires dans les cellules sexuelles mâles chez les Lépidoptères. [69] 1682-1684, ill. **Hughes, A. W. M.**—Induced melanism in Lepidoptera. [Pro. R. Soc., London] 110, (B): 378-402, ill. **Larsen, O.**—Beiträge zur kenntnis des pterygopolymorphismus bei den wasserhemipteren. [Acta Univ. Lund] 27, (1): No. 8, 30 pp., ill. **Malouf, N. S. R.**—The morphology of the head of a "White Grub". [Bull. Soc. R. Ent. Egypte] 1932: 66-87, ill. **Maziarski, M. S.**—Sur le tissu musculaire des insectes. IV. Les éléments contractiles dans les couches musculaires de l'intestin moyen des Coléopteres. [Bull. Int. Acad. Polonaise Sci. et Lett.] 1931: 425-445, ill. **Roberts, E. F.**—The clinical application of blow-fly larvae. [76] 1932: 531-536. **Strebel, O.**—Beiträge zur biologie, ökologie und physiologie einheimischer collembolen. [46] 25: 31-153, ill. **Werringloer, A.**—Die sehorgane und sehzentren der Dorylinen nebst untersuchungen über die facettenaugen der Formiciden. [94] 141: 432-524, ill. **Zaćwilichowski, M. J.**—Ueber die innervierung und die sinnesorgane der flügel von insekten. II. Teil. [Bull. Int. Acad. Polonaise Sci. et Lett.] 1931: 391-424, ill. **Zarapkin & Timoféeff-Ressovsky.**—Einige gesetzmässigkeiten in der variabilität der fleckenform bei Epilachna chrysomelina (Coccinellidae). [88] 20: 384-387, ill. Eine graphische darstellungsmethode der abhängigkeit zwischen der variabilität zweier grössen. [97] 52: 138-147, ill.

ARACHNIDA AND MYRIOPODA.—*Brolemann, H. W.—Description d'un Myriapode nouveau de la Guyane française. [25] 37: 119-121, ill. **Hilton, W. A.**—Tartarid whip-scorpions of Southern California. [13] 24: 33-40, ill. **Verhoeff, K. W.**—Bronns Klas. Ordn. Tier-reichs. Bd. 5, (Lief. 12), pp. 1835-1962. Diplopoda, in part.

THE SMALLER ORDERS OF INSECTS.—*Light, S. F.—Contribution toward a revision of the American species of Amitermes. [67] 5: 355-414, ill. ***McGregor, E. A.**—The ubiquitous mite, a new species on citrus. [10] 34: 60-64, ill. ***Mills, H. B.**—Catalogue of the Protura. [19] 27: 125-130. ***Navas, R. P. L.**—Décadas de insectos nuevos. [Brotéria] 1: 62-73, ill. (S). **Stanford, J. S.**—Mallophaga from Utah birds and mammals. [4] 64: 112-113. **Williamson, E. B.**—Dragonflies collected in Missouri. [Occas. Pap. Mus. Zool.] 240: 40 pp.

ORTHOPTERA.—*Borelli, A.—Dermaptères nouveaux du Muséum zoologique de Hamburg. (S). [56] 11: 87-97, ill. **da Costa Lima, A.**—Notas sobra Phasmida. (S). [Rev. Ent., São Paulo] 2: 257-261, ill. **Criddle, N.**—The life-history of Schistocerca lineata. [4] 64: 98-102, ill. ***Hubbell, T. H.**—A revision of the puer-group of the North American genus Melanoplus, with remarks on the taxonomic value of the concealed male genitalia in the Cyrtacanthacrinae (Acrididae). [Univ. Michigan Mus. Zool.] Misc. Publ. 23: 64 pp., ill. ***Moreira, C.**—Dermapteros da collecção do Museu Paulista. [Rev. Ent. São Paulo] 2: 277-289, ill. (S).

HEMIPTERA.—Autuori, M.—Contribuição para o estudo biologico de Eutriatoma flavidae. [Rev. Ent., São Paulo] 2: 269-275, ill. **Barber, H. G.**—Two Palearctic Hemiptera in the Nearctic fauna (Pentatomidae: Nabidae). [10] 34: 65-66, ill. **da Costa Lima, A.**—Dois homopteros brasileiros pouco conhecidos. [Bol. Biol., Rio de Janeiro] 1932: 36-40, ill. ***Drake & Harris.**—A synopsis of the genus Metrobates (Gerridae). [3] 21: 83-88, ill. ***Drake & Harris.**—A survey of the species of Trepobates (Gerridae). [19] 27: 113-122, ill. **Gillett, J. D.**—Climbing organ on a reduviid bug. [9] 65: 123. ***Hempel, A.**—Descripção de vinte e duas especies novas de Coccideos. [Rev. Ent., São Paulo] 2: 310-339. (S). ***Jaczewski, T.**—Studies on Mexican Corixidae. [An. Mus. Zool. Polonici] 9: 187-230, ill. **Rivnay, E.**—The influence of relative humidity upon the ratè of development of the bed bug C. lectularius. [Bull. Soc. R. Ent. Egypte] 1932: 13-16. ***Schmidt, E.**—Zwei neue Cicadellinen-gattungen und arten von Ecuador. [48] 49: 45-50, ill.

LEPIDOPTERA.—Bischoff, H.—Ueber einen bisher unbeachteten sexualcharakter der Parnassier. [Parnassiana] 2: 16-19, ill. **Comstock & Dammers.**—Early stages of Melitaea leanira wrightii and Calephelis nemesis. [38] 31: 9-15, ill. **Crumb, S. E.**—The more important climbing cutworms. [19] 37: 73-98, ill. ***Forbes, W. T. M.**—Supplementary report on the Heterocera or moths of Porto Rico. [Jour. Dept. Agric. Porto Rico] 15: 339-394, ill. **Gaede, M.**—Lepidopterorum Catalogus. Pars 52. Aganaidae. 39 pp. **Griffin, E. J.**—A note on Haworth's "Lepidoptera Britannica" etc., 1803-1828. [75] 9: 531-532. **Hewer, H. R.**—Studies in Zygaena. Part I (A) The female genitalia; (B) the male genitalia. [93] 1932: 33-75, ill. ***Jörgensen, P.**—Lepidopterologisches aus Südamerika. [63] 1932: 37-48, cont. **Learned, E. T.**—Eriopyga contrahens in Red Pepper. [19] 27: 112. ***McDunnough, J.**—Notes on Agrotid genera with descriptions of new species. [4] 64: 104-112, ill. ***Niepelt, W.**—Eine neue Castnia-rasse. (S). [18] 26: 65, ill. **Sperry, G. H. & J. L.**—Notes on the larva of Melitaea pola. [38] 31: 8. **Stichel, H.**—Lepidopterorum Catalogus. Pars 51. Brassolidae. 115 pp. **Wille, J.**—Margaronia quadristigmalis (Pyralid.), ein grossschädling des olivenbaumes. [Rev. Ent., São Paulo] 2: 339-369, ill.

DIPTERA.—*Barnes, H. F.—Notes on Cecidomyidae. (S). [75] 9: 475-484. ***Borgmeier, T.**—Revisão do genero ecitophilo Xanionotum, com a descripção de duas especies novas (Phoridae). [Rev. Ent., São Paulo] 2: 369-380, ill. (S). **Bradley, G. H.**—Some factors associated with the breeding of Anopheles mosquitoes. [47] 44: 381-399, ill. ***da Costa Lima, A.**—Sobre os phlebotomos americanos (Psychodidae). [Mem. Inst. Oswaldo Cruz] 26: 15-70, ill. **Curran, C. H.**—New North American Diptera, with notes on others. [40] 526: 13 pp., ill. ***Curran, C. H.**—New American Diptera. [40] No. 534: 15 pp. ***Dickinson & Alexander.**—The crane-flies of Wisconsin with a description of a new species. [Bull. Pub. Mus., Milwaukee] 8: 142-266, ill. **Fischer, C. R.**—Nota taxonomica e biologica sobre Anastrepha grandis (Trypetidae). [Rev. Ent., São Paulo] 2: 302-310, ill. ***Hall, D. G.**—Canadian Sarcophagidae. [4] 64: 102-103, ill. **Hendel, F.**—Nochmals Meigens "Nouvelle Classification des mouches à deux ailes", Paris 1800. [34] 98: 182-187. ***Hendel, F.**—Kritische und synonymische bemerkungen über Dipteren. [Verh. Zool.-Bot. Gesel., Wien] 81: 4-19. ***Hendel, F.**—Die ausbeute der deutschen

Chaco-Expedition 1925-26.-Diptera. Sciomyzidae, Lauxaniidae, Tanypezidae, Lonchaeidae, Tylidae, Drosophilidae, Milichiidae. [56] 11: 98-110, cont. ***Kröber, O.**—Die Tabaniden-subfamilie Bellardiinae der neotropischen region. [Rev. Ent., São Paulo] 2: 289-302, ill. ***Macfie, J. W. S.**—Some new or little-known Ceratopogonidae. (S). [75] 9: 485-499, ill. **Malloch, J. R.**—Notes on exotic Diptera. [Stylops] 1: 112-120, ill. ***Martini, E.**—Chagasia fajardoi var. stigmopteryx, nov. var. (Culicidae). (S). [Rev. Ent., São Paulo] 2: 276-277.

COLEOPTERA.—Bequaert, J.—Paederus signaticornis, the cause of vesicular dermatitis in Guatemala (Staphylinidae) [19] 27: 107-112. ***Bierig, A.**—A new species of Polyphemus from Brazil (Staphylinidae). [Rev. Ent., São Paulo] 261-264, ill. ***de Breuning, M. E.**—Cinq nouvelles formes de Carabini. (S). [Bull. Mus. Nat. Hist. Nat., Paris] 3: 620-623. **Davis, W. T.**—A coccinellid beetle new to the fauna of New York State. [19] 27: 101. **Heikertinger, F.**—Die Coccinelliden, ihr "Ekelblut", ihre warntracht und ihre feinde. [97] 52: 65-102, ill. ***Hustache, M. A.**—Nouveaux Zygopini de la Guyane Française. [Bul. Mus. Nat. Hist. Nat., Paris] 3: 608-610. ***Musgrave, P. N.**—Notes on Helmidae taken in the Tennessee Great Smoky Mountains, with description of a new species. [10] 34: 78-81, ill. **Pic, M.**—A propos de Longicornes. [L'Exchange] Hors-texte No. 448: 4 pp. ***Thèry, M. A.**—Deux Conognatha nouveaux de Colombie (Buprestidae). [Bull. Mus. Nat. Hist. Nat., Paris] 4: 171-173, ill. ***Valentine, J. M.**—A classification of the genus Pseudanophthalmus (Carabidae) with descriptions of new species and notes on distribution. [Jour. E. Mitchell Sci. Soc.] 47: 261-280, ill.

HYMENOPTERA.—Balduf, W. V.—Revision of the chalcid flies of the tribe Decatomini (Eurytomidae) in America north of Mexico. [50] 79, Art. 28: 95 pp., ill. **Bequaert, J.**—A tentative synopsis of the hornets and yellow-jackets (Vespinae) of America. [70] 12: 71-138, ill. **Betz, B. J.**—The population of a nest of the hornet Vespa maculata. [73] 7: 197-209, ill. **Chagnon, G.**—A hymenopteron of Aquatic habits. [4] 64: 112. **Clausen, C. P.**—The early stages of some Tryphonine Hymenoptera parasitic on sawfly larvae. [10] 34: 49-60, ill. ***Crawford, J. C.**—New North American bees. [10] 34: 69-78. **Eidmann, H.**—Beitrage zur kenntnis der biologie, insbesondere des nestbaues der

blattschneiderameise. Atta sexdens. [46] 25: 154-183, ill. **Goetsch, W.**—Beiträge zur biologie südamerikanischer ameisen. [46] 25: 1-30, ill. **Leveque, N.**—Some problems in the evolution and taxonomy of carpenter bees (Xylocopidae), correlated with a study of their symbiotic mites. [8] 68: 109-112. ***Muesebeck, C. F. W.**—Two new species of Phanomeris (Braconidae) parasitic on leaf-mining sawflies. [10] 34: 81-83. **Noble, N. S.**—Studies of Habrocytus cerealellae, a Pteromalid parasite of the Angoumois grain moth, Sitotroga cerealella. [67] 5: 311-354, ill. ***Ogloblin, A. A.**—Himenópteros nuevos o poco conocidos de Guayrá (Dryinidae). [Rev. Ent., São Paulo] 2: 264-269, ill. **Vance, A. M.**—The biology and morphology of the braconid Chelonus annulipes, a parasite of the European corn borer. [U. S. Dept. Agric.] Tech. Bull. 294: 48 pp., ill.

Doings of Societies

Entomology at the Fourth Congress of the International Society of Sugar Cane Technologists in Porto Rico.

The fourth Congress of the International Society of Sugar Cane Technologists was held in San Juan, Porto Rico, March 1 to 16, 1932. The Section on Insect Pests of Sugar Cane was well attended. Among those present were the Chairman, C. E. Pemberton, Hawaiian Sugar Planters' Experiment Station; J. G. Myers, Imperial Institute of Entomology, Trinidad, B.W.I.; H. E. Box of Antigua, B.W.I.; and from Porto Rico: M. D. Leonard, G. N. Wolcott and F. Sein of the Insular Experiment Station; Julio Garcia Diaz and Rachel R. Dexter of the University of Porto Rico; Stuart T. Danforth of the College of Agriculture at Mayaguez; Wm. A. Hoffman of the School of Tropical Medicine; L. A. Catoni of the Insular Plant Quarantine Service; Richard Faxon and A. S. Mills of the U. S. Plant Quarantine and Control Administration and several visitors.

Twenty papers on various phases of sugar cane entomology from Java, Hawaii, Philippines, Louisiana, Cuba, Porto Rico, Antigua, Barbados and Peru were presented at four separate sessions. One session was almost entirely devoted to a discussion of the moth borer, *Diatraea saccharalis* Fab., giving special

emphasis to factors affecting its abundance and to methods of measuring the degree of infestation. A committee was appointed to attempt to standardize the latter. Another session was given to the general subject of biological control of sugar cane insects and to the preparation of a list of the sugar cane insects of the world and their natural enemies. A committee was appointed for the fulfillment of this project. Of particular interest was a paper on the food habits of an imported toad, *Bufo marinus* L., in Porto Rican cane fields. At the third session three important papers were read on the utilization of the egg-parasite, *Trichogramma minutum* Riley, by means of mass production for the control of the sugar cane moth borers. An illuminating inquiry into the merits of this method followed. The final session was held jointly with the Section on Diseases of Sugar Cane. This included a discussion of the relation of insects to certain sugar cane diseases, chiefly mosaic and root troubles. At this session was presented the report of the Committee on Protective Sugar Cane Quarantine which included a special discussion of a cane butterfly, *Calisto pulchella* Lathy, peculiar to Santo Domingo and Haiti.

The technical sessions were followed by an extended tour of the Island to visit the principal Centrals where the more important sugar cane insects were observed in the field.

The detailed "Proceedings" will be published in San Juan in the near future.

C. E. PEMBERTON, Entomologist, Hawaiian Sugar Planters' Association and M. D. LEONARD, Entomologist, Insular Experiment Station, Porto Rico.

Ninth Rocky Mountain Conference of Entomologists.

The Ninth Rocky Mountain Conference of Entomologists will be held in Pingree Park, Colorado, August 15 to 20 inclusive. The Agricultural College Forestry Lodge will be made the headquarters and the plans so made that the entire family can enjoy the occasion. Anyone interested in details in regard to the meeting should get in touch with the Secretary, George M. List, Fort Collins, Colorado.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.
Square, Pa.

Butterflies—Desire correspondence from Western United States, Canada and Alaska. Will exchange rare California material for specimens from your locality. Lloyd M. Martin, P. O. Box 52, Roscoe, California.

Exchange—Local Venezuelan (South America) species of lepidoptera offered in exchange for North American species. Oscar Zuloaga, P. O. Box 263, Caracas, Venezuela.

Exchange.—Desire Lepidoptera, particularly specimens and data of Wisconsin and U. S. Catocala. Exchange for same. Wm. E. Sieker, 46 Breeze Terrace, Madison, Wisconsin.

Will buy or exchange—Pinned Microlepidoptera and papered Pieridae of North America. Full data with all specimens. Named material of all groups offered. Alexander B. Klots, University of Rochester, Rochester, N. Y.

Wanted—Names and addresses of those desiring Insects from Tennessee. Will collect there during June-September, in all orders. Correspondence solicited. B. Benesh, 107 Argonne Drive, North Chicago, Ill.

Wanted—West Coast Geometrids for cash or in exchange for California Butterflies. Edward Guedet, P. O. Box 305, Napa, Calif.

ANNOUNCEMENT

Comstock Publishing Company, 124 Roberts Place, Ithaca, N. Y.

Manual for the Study of Insects, by John Henry Comstock and Anna B. Comstock, revised by Glenn W. Herrick. This handbook, long the chief text-book of Entomology in American schools and colleges, has been completely revised, the subject matter somewhat condensed, the analytical tables retained but revised and new figures added. Price **$4.00.**

An Introduction to Entomology, by John Henry Comstock. This extended treatise on entomology consists of two parts: Part I, the structures and metamorphoses of insects; Part II, the classification and life histories of insects. Its most distinctive feature is the analytical tables by which an American insect may be traced to its family. 8vo. Buckram cloth, XXIX, 1004 pages, 1228 illustrations. Net **$6.00.**

J. J. WHITE,

Punta Gorda, British Honduras, B. W. I.,

will collect available material in any order. Correspondence solicited.

NOW READY

Our New and Complete Catalogue of Entomological Supplies and Equipment.

Listing the largest and most practical and complete stock of Entomological Supplies and Equipment available in the world. Many new articles of collecting and museum equipment, designed by the foremost entomologists in the country, are now available for the first time.

Directions for Collecting and Preserving Insects

by ALEXANDER B. KLOTS, Ph. D.

One copy of the above will be distributed gratis to everybody on our mailing list; additional copies may be obtained at 15 cents each, postpaid.

Indo-Australian Coleoptera

A large collection of very beautiful and desirable species, many of them never before offered for sale by any entomological dealer, is now available. All specimens have full and accurate data, and have been named by one of the foremost Coleopterists of Australia. Write for price-list.

Specimens of Economic Insects for Pest Collections

Several hundred species are now available; more are being sent in daily. Ward's is the only source of supply in North America for such material, for:

Economic Entomologists, Colleges of Agriculture, Experiment Stations, Etc.

Ward's Natural Science Establishment, Inc.,

P. O. Box 24, Beechwood Station

ROCHESTER, N. Y., U. S. A.

The Frank A. Ward Foundation of Natural Science of the University of Rochester

YE OLD TIME COLLECTOR

is still on deck and going strong. Am willing to collect any order of insects this season in Colorado and Wyoming.

Duplicates of all orders always on hand.

ERNEST J. OSLAR
4189 Julian Street, Denver, Colorado.

WANTED FOR CASH Sphingidae, Saturnidae, Hemileucidae, Ceratocampidae. Perfect specimens of desirable species of the above from any part of North or South America. Desire specimens from the Southern, Middle-Western, South Western and Pacific Coast States. Single specimens of rare or unusual species, varieties and abnormal examples are particularly wanted. Collectors in any locality having anything to offer, write

JOHN M. GEDDES,
331 High Street, Williamsport, Pennsylvania, U. S. A.

BUTTERFLY TRANSITION FORMS AND "FREAKS" WANTED

WHEN YOU SELL YOUR COLLECTIONS, SELL THESE KINDS OF SPECIMENS SEPARATELY. THEY BRING MORE.

JEANE D. GUNDER,
310 LINDA VISTA AVENUE, PASADENA, CALIFORNIA

For Sale native Florida Butterflies and Moths spread for Riker Mounts or in papers. Also make up Riker Mounts to order. Chrysalids and Larvae.

MRS. LESLEY E. FORSYTH,
Florida City, Florida.

Morphos from French Guiana, etc., 10 species 20 specimens, including Hecuba, Rhetenor, Cypris, etc., $6.00. Fine bred Urania riphaeus, large $2.00 dozen, small $1.50 dozen. Very fine Indian butterflies in papers, many Papilios, Charaxes, Delias, etc., $5.00 per 100. British Diurnals, 100, 50 species, named $3.00. British Lepidoptera, Coleoptera, 250,000 specimens, named, cheap lots: 500 species 3 cents each, 1000 species 5 cents each. Lists from

A. FORD, Entomologist,
42, Irving Road, Bournemouth, England.

ATTENTION
WORKING ENTOMOLOGISTS

We would call your attention to the increasing scarcity of many of the publications of the American Entomological Society, particularly those important monographic papers which were published by the Society in the latter quarter of the last century and the first two decades of the present one.

The publisher's stock of many of these has been greatly depleted, in some cases completely exhausted, and as the prices of those still in stock are naturally increased as the stock diminishes, we would advise those students who desire to secure these important reference works, to obtain copies before the publisher is unable to supply them, at least at the present prices. We shall be pleased to send you our price lists if you will state the order or orders desired.

We also have some scarce works, represented by only one or two copies, secured from various sources since their original stock became exhausted. These are not cited in our general price lists. Some of these publications you may have been trying to secure in times past. We will gladly give you prices on any we may have if you will send us your list of desiderata, stating authors and titles

The above refers only to works published in the Proceedings of the Entomological Society of Philadelphia, and in the Transactions of The American Entomological Society.

Many important articles have been published in Entomological News, and some of these may be secured by purchasing the number of that journal containing the same. The volume and pagination, and date if possible, should be given in requesting information regarding these works.

Address all communications to

The American Entomological Society,
1900 Race Street, Philadelphia, Pa.